

## **Draft Sections 1 and 2 of the EE/CA for the USS Washtenaw County LST-1166**

### **INTRODUCTION**

This draft Engineering Evaluation/Cost Analysis (EE/CA) was prepared for a non-time critical removal action proposed by the United States Coast Guard (USCG) for the ex-USS Washtenaw County LST-1166 (LST-1166), an abandon former Naval vessel (CERCLIS ID No. ORN001002909) located in Columbia County, Oregon (Site ID 10JR). The USCG requested the U.S. Environmental Protection Agency (EPA) support the development of the draft EE/CA due to EPA's expertise with the EE/CA development process. The USCG is the lead agency for LST-1166 because it is located in the coastal zone. The USGS is funding EPA's activities through a Pollution Removal Funding Authorization (PRFA) dated September 2, 2010. EPA's contractor, Techlaw Inc., assisted in the preparation of this draft EE/CA under contract EP-S7-06-03, and Technical Direction Document (TDD) 10-12-0040. This draft was prepared to satisfy the criteria for initiating a removal action under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

## **SITE CHARACTERIZATION**

### **Site Description and Background**

Dibblee Point is a 110-acre parcel along the Columbia River located just outside the city limits of Rainier, Oregon - west of the Lewis and Clark Bridge which connects Rainier and Longview Washington, and is located at River mile 65 (Figure 1). The site is owned by the State of Oregon and managed by the Division of State Lands. Columbia County owns a small parcel of land within the 110 acres and approximately 60 acres is leased by a local sand quarry operation, BC Excavation (no author 2003).

### **Site Location and Setting**

The LST-1166 an abandoned former U.S. Navy (USN) vessel illegally moored at Dibblee Point along the south bank of the Columbia River and south of Lord Island at River Mile #63 (Figure 1). It is located approximately 4.5 miles west northwest of Rainier, Columbia County, Oregon and approximately 1.25 miles downstream and south of Longview, Washington (Lat. 46° 7'17.82"N, Long. 123° 0'52.24"W).

The vessel is bordered on the south by forested river banks, wetlands and open farmland. Several farms are located on this bank and within one mile of the vessel. The closest farm is located within ¼ mile of the site. Lord Island, which borders the site on the north, primarily consists of wetland and forested land. LST-1166 is bordered east and west by the Columbia River (USEPA 2010b).

### **Site History**

USS *LST-1166*, a 2,590-ton *LST-1156* class tank landing ship built in Sturgeon Bay, Wisconsin, was commissioned in late October 1953 and served in the western Atlantic and Caribbean areas for two years. At the beginning of July 1955 the ship was renamed the *Washtenaw County*. From January to May of 1956 the ship served in the Mediterranean Sea as a unit of the Sixth Fleet and in mid-January 1958 passed through the Panama Canal to join the Pacific Fleet. *Washtenaw County*'s first regular Western Pacific cruise began in April 1959 and was completed in September.

*Washtenaw County* spent the next thirteen years participating in Seventh Fleet amphibious training and logistics activities (Photo 1). Beginning in mid-1964 the *Washtenaw County* was involved in Vietnam War operations. The last of *Washtenaw County*'s wartime assignments ended in mid-1972. In 1973 the ship underwent conversion to a special minesweeper and in February 1973 was decommissioned. *Washtenaw County* was inactivated at Yokosuka, Japan, in August 1973. The ship was stricken from the Naval Vessel Register late in August 1973 and was sold at the end of January 1975. (Naval History and Heritage Command 2006).

The ship was subsequently purchased by foreign interests. It was registered commercially as Al Manhal I from 1973 to 1980 and as El CentroAmericano from 1980 to 1984. In 1980 the LST-1166 was towed to Astoria, Oregon because of mechanical issues, and it has been moored at various locations along both the Willamette and Columbia rivers. In 2002 the owner of the LST-1166 was granted temporary permission to moor at Dibblee Point, approximately 1.25 miles south of Longview, Washington (USCG 2009).

The vessel is currently owned by Washtenaw County LST-1166, LLC a defunct non-profit organization. The current owner originally purchased the vessel with the intent of converting it to a maritime museum. In 2002 the vessel was towed to its current location and some refurbishing was conducted toward this end, but the endeavor was not successful.

On May 29, 2003 Washtenaw County – LST-1166 LLC formerly doing business as Amphibious Forces Memorial Museum (AFMM) purchased the vessel. The company was administratively dissolved on August 4, 2006, and then reinstated on September 24, 2007. The USCG Sector Portland has issued three Administrative Orders and a Captain of the Port (COTP) order to the owners for environmental cleanup and mitigation of the potential threats from the vessel, but the owner has not complied. Furthermore, the Certificate of Financial Responsibility (COFR) Guarantor for the vessel, Lloyd's of London, cancelled the COFR as of February 7, 2008. They have refused to conduct a cleanup of the vessel. The current owner, Washtenaw County LST-1166, LLC is, for all intents and purposes, financially defunct.

Trespassing by local persons appeared to begin in 2004 and reports of vandalism, illegal methamphetamine activity, illegal dumping of waste oil and stripping and theft of metal, wiring, piping, hatches and valves have since occurred. The hull is deteriorating and the vessel has taken on water from an apparent leak. The bottom two decks and the engine room are currently flooded. (USEPA 2010b).

### **Surrounding Land Uses and Populations**

The closest city to the site is Longview, Washington, in Cowlitz County which has a population of approximately 34,660. Drinking water sources for this community include private wells and public water systems, and are tracked by area by the Division of Environmental Health Office of Drinking Water. The Average temperature for the area ranges from 45°F in the winter months to 76°F in the summer months with an annual average precipitation of 46.17". Wind conditions are generally less than 15 mph with gusts to 20 mph. (NOAA *undated*).

### **Surface Water Hydrology and Sediment**

The Columbia River navigation channel begins at the Columbia River bar and continues five miles upriver at a depth of 55 feet and a width of 2,640 feet. After which, it maintains a depth of 43 feet and a width of 600 feet for 100 miles to the Portland Harbor. The Barlow Channel, which runs adjacent to the LST-1166, has an approximate depth of 40-43 feet (NOAA *undated*).

The Lower Columbia River Valley contains deep alluvial deposits of sand, and some silt and gravel. The source of the fine grained sediment is the upper basin, east of the Cascade Mountains. Streams flowing from the Cascades Mountains produced most of the sand supply. The riverbed of the main channel consists of primarily fine to medium sand (0.125-0.50 mm) with fine sediments comprising less than 5 percent of the bed material of the river channel. The location of the Columbia River channel has been stable for 6,000 years. (USACE *undated*).

The USGS measures the annual discharge for the Columbia River at The Dalles, OR at River Mile 194. The average annual discharge for 1879-1999 was 86,175,360 US gallons per minute. Sand transport in the lower Columbia River is driven by the river discharges. Annually, the lower Columbia River sand transport is highly variable ranging from approximately 0.1 mcy in 1926 to over 37 mcy in 1984.

Over the long-term, lower discharges and reservoir flow have caused persistent reductions in sand transport in the Columbia River. The high discharges prior to 1900 produced an average total sand transport of 9.1-mcy/yr. The lower natural stream flows during 1900-1936 caused the total sand transport for the period to fall to an average of 3.8-mcy/yr. From 1936 to 1974 sand transport had dropped to an average of 3.2-mcy/yr. Since 1975, flow regulation has reduced spring freshet discharges and the average annual sand transport has declined to 1.3-mcy/yr. (USACE *undated*)

Based on United States Army Corps of Engineers (USACE) documentation, historical data regarding accretion volumes is limited for much of the lower Columbia River. Sediment volumes were only collected at the estuary, and were collected primarily from the time periods 1879 through 1935 and 1935 through 1958. The annual estuary accretion rate was 5.0 mcy/yr from 1879-1935 and 3.3 mcy/yr from 1927-1958. Because of the decreased annual sand transport volume, it was concluded to be likely that there has been a corresponding decrease in the volume of sand accretion for the Columbia River (USACE *undated*).

The Bathymetric Atlas of the Columbia River Estuary contains additional data on accretion levels from 1982 (Columbia River Estuary Data Development Program 1983). According to Mr. James Crammond the Director of the USGS Oregon Water Science Center, there are current studies being conducted on sedimentation rates, but they have not been published or released to the general public at this time (USGS 2011).

### **Sensitive Ecosystems**

The Columbia River supports a wide array of fish, wildlife and sensitive environments. The river has been designated as critical habitat for the two species of federal-listed threatened salmon and is a migratory pathway crucial for the maintenance of steelhead trout. Lord Island, which is adjacent to the site is designated a “waterfowl concentration” area by the Region 10 Geographic Response Plan. LST-1166 is located in a semi-remote part of the river; however, this area is extensively used by the public for fishing and it is downstream from a public access

beach. The land immediately adjacent to the LST-1166 is used both recreationally and for industrial purposes. (USEPA 2010)

### **Previous Removal Actions and Investigations**

On September 7, 2007, the USCG was notified by local law enforcement authorities that oil was discharging from the LST-1166 into the Columbia River. The USCG conducted an inspection and confirmed there was a substantial threat of discharge due to the condition of the vessel and the potentially hazardous materials, including asbestos, liquid oils and fuels, PCBs and lead in paint, foam, volatile organic compounds, and other substances. Evidence of vandalism and theft was also observed during this inspection (Photo 2).

Because the owner of the vessel, an LLC, was unable to meet the terms of the 40CFR 229.3 General Permit requirements in order to comply with the USCG orders, the USCG conducted interim removal activities from July 2008 to January 2009.

During the USCG Removal Action for the LST-1166, various sample collection methods were employed to determine the matrices, locations, and analytical methods for contaminants of concern located on the ship. The purpose was to characterize waste material for proper disposal and remediation.

Costs provided by the Coast Guard (USCG 2009) for removal to date include \$4,784,283 OSLTF and \$137,036 CERCLA. During this removal activity, the USCG removed and disposed of hazardous substances and materials as follows:

- 3,975 gallons of fuel and oil;
- 8,100 pounds of oily debris;
- 26,342, gallons of oily water;
- 465,800 gallons of water to be treated;
- 5,125 gallons of polychlorinated biphenyls (PCB) oil from forward hydraulics and piping;
- 349,442 pounds of PCB-contaminated solids;
- Five pounds of mercury;
- Four pounds of hypodermic needles, and;
- 120 cubic yards of friable asbestos.

After this removal action, the asbestos insulation that still remained on walls, surfaces and piping was encapsulated with a polymer. (USCG undated).

Since the Coast Guard Removal Action, the EPA has conducted two inspections of the vessel, one in January 2010 and the second in March 2010. It has been determined that significant contamination remains on board the vessel including PCB contamination in interior paint exceeding 50 ppm, friable paint containing lead, and wiring insulation containing PCBs.

### **Source, Nature, and Extent of Contamination**

During the recent inspections by the EPA, painted surfaces throughout the interior and exterior of the vessel were observed to be corroding and flaking, with paint chips littering most horizontal surfaces and deck floors. In addition, it was evident that paint was flaking off of external surfaces and the hull and falling into the Columbia River. Sheen, from unknown sources, was observed to be floating on top of the water flooding the lower decks. Several rooms and interior spaces in the vessel are completely filled with foam.

### **Constituents of Potential Concern**

Constituents of potential concern remaining after the previous removal action include; flaking lead-based paint on the exterior of the vessel, flaking PCB and lead-based paints on the interior of the vessel, asbestos wiring insulation containing PCBs, and encapsulating asbestos insulation. The concentrations of PCBs and lead in wipe and paint flake samples shown in Table 2-1 are based on laboratory analytical results provided by the Coast Guard.

There is standing water in the lower decks approximately 20 feet deep due to a broken seal (USEPA 2010a). Until the water is pumped out of the vessel, and the seal can be fully inspected, it is unknown whether oils and fuels have been removed to the maximum extent practicable.

All loose equipment including; engines, generators, cables, winches, girders, boom arms and other assorted machinery must be removed from or welded to the ship prior if scuttling of the vessel is elected for the removal to prevent its detachment from the vessel during disposal operations. In addition, some of this equipment may have residual oils remaining. The equipment must be inspected and any residual liquids removed before the vessel can be scuttled.

During the 2010 EPA inspection it was observed that trespassers had exposed and begun removing foam. Any loose, exposed foam must be removed from the vessel. All compartments filled with foam must be securely sealed before scuttling so that foam will not be released into the water or air during transport and disposal operations.

### **Cleanup Standards**

- Lead-based paint standard is the removal of deteriorating, or friable paint.
- PCB-based paint standard is removal of deteriorating, or friable paint with concentrations of PCB greater than 50 mg/Kg.
- Asbestos containing materials standard is removal or encapsulation of friable asbestos.
- Asbestos insulating electrical wiring containing PCB standard is removal or encapsulation of wiring with concentrations PCB greater than 50 mg/Kg.

**Table 2-1 – Sample Results for PCB and Lead Swipes**

Sample ID	COC	Sample Method and/or Analytical Method Description	Analytical Result	Cleanup Standards
<b>Lead</b>				
Hatch-H8 <sup>2</sup>	080820-719	Total Recoverable Heavy Metals in Non-potable Water	182 µg/L	2.5 µg/L
R1-Green Paint-005 Dup <sup>1</sup>	080820-719	Heavy Metals in Solids, Paint, and Oil by EPA Method 7000 Series	8200 mg/kg	Any Friable Lead-based Paint
White Paint Rib 56 <sup>1</sup>	081024-923	Heavy Metals in Soil EPA method 7000 Series	71500 mg/kg	Any Friable Lead-based Paint
<b>PCBs</b>				
7 Stern Floor - Starboard	800902-762-4	PCBs in non-potable water by EPA method 8082/PCBs in wipes by EPA Method 8082	5120 µg/wipe	50 ppm
3 Front Port Hyd Equip. Dup	800902-762-3	PCBs in non-potable wipes by EPA method 8082	4360 µg/L	50 ppm
R25-Blk Insl Covering-013	080820-719	PCBs in Solid Material and Oil EPA method 8082	2160 mg/kg	50 ppm
Portside Bow Oil	080820-719	PCBs in Solid Material and Oil EPA method 8082	361 mg/kg	50 ppm
Paint Room 7	080820-719	PCBs in Solid Material and Oil EPA method 8082	72.6 mg/kg	50 ppm

<sup>1</sup>Laboratory analytical results do not state whether this was a wipe, or flake sample. No removal action logbooks or notes are available for comparison.

<sup>2</sup>Laboratory analytical results do not state whether this was a wipe sample, or from water that was removed from the hatches. CCS letter to Dragon Laboratories dated 10/10/08 describes this sample location as liquid in a storage tank. It is not stated whether this material was disposed during the initial USCG Removal Action CWA discharge standards, as well as Longview City or Municipal Sewer Discharge standards apply.

## **Analytical Data**

Laboratory analytical data and results from the removal action sample collection are included in Appendix X.

## **Streamlined Risk Evaluation**

Substances found on LST-1166, including the substances discussed the preceding section, constitute hazardous substances as defined by Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §9601(14). Oils present and discharged from LST-1166, also in the preceding section, meet the definition of “oil” and “discharge” as defined in Sections 311(a)(1) and (2) of the Clean Water Act (CWA), 33 U.S.C. §1321(a)(1) and (2) and Sections 100(23) and (7) of the Oil Pollution Act (OPA), 33 U.S.C. §2701(23) AND (7).

Estimated materials remaining on board are reportedly above the quantity allowed before a ship can be scuttled per 40 CFR Part 229.2 Transport of Target Vehicles and/or 229.3 Transportation and disposal of vessels. In addition, the materials remaining on the ship present the potential for migration to target receptors, both human and ecological (NARA 2010).

## **Human Health Risks**

Threats from exposure to contaminants onboard the vessel is to both human and ecological receptors. The elevated concentration of hazardous substances and exposure of contaminated surfaces to the environment indicates that inhalation (air) and direct contact (dermal) human exposure pathways potentially exist. Nearby water recreationists and trespassers could also be exposed to the contaminants. Furthermore, the potential for exposure is elevated because the contact of the exterior of LST-1166 is unrestricted to weather and the environment. Open contact with the Columbia River could result in redistribution of contaminants through the open water column and/or sediments.

## **Ecological Risks**

Ecological receptors, including avian, mammalian, fish, and marine plant receptors could potentially be exposed to elevated levels of contaminants found either on the vessel, or in the Columbia River, or sediments contaminated by these materials. Similarly ecological receptors could be exposed through ingestion of paint flakes, water and sediments contaminated by these materials.



## References

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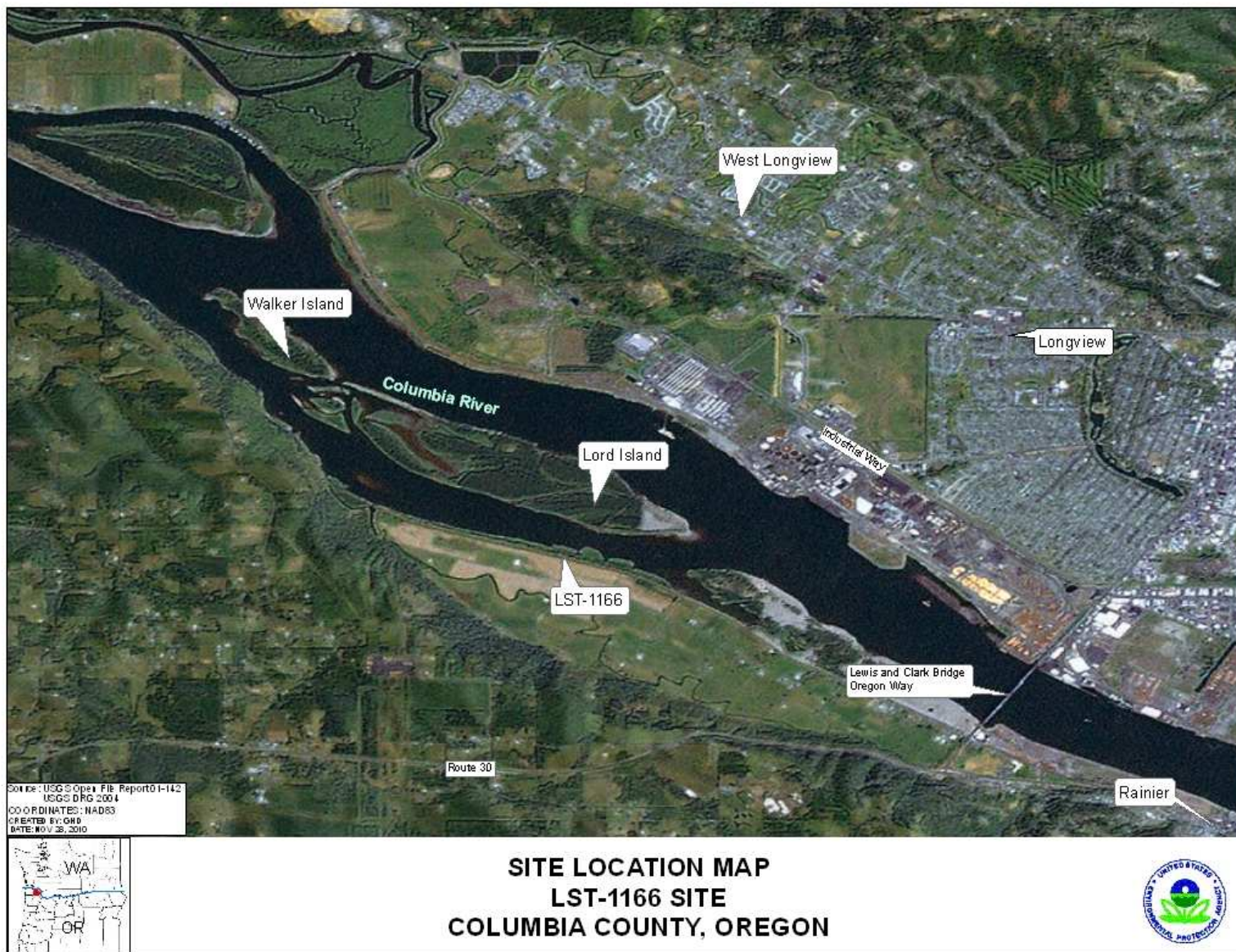


Photo # K-78101 USS Washtenaw County moored in Subic Bay, October 1969





